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MAY 15 1937

# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



May 15, 1937

Pillars of Learning

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A SCIENCE SERVICE PUBLICATION

## SCIENCE NEWS LETTER

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The Weekly



Summary of

## Current Science

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## DO YOU KNOW?

Mound birds are among the few birds that can fly the day they are hatched.

Pygmy water lilies are perfectly formed but usually no more than two inches across.

The spectacular organ-pipe cactus grows only in a rather small area of southern Arizona.

An Italian invention of a new process for hardening steel is expected to save over 50 per cent. in material.

CCC workers have planted a billion trees and have constructed over 82,000 miles of truck trail and minor roads.

The islands of Langerhans in the pancreas, which produce insulin, were first described by Paul Langerhans when he was still a medical student.

In a recent survey, dentists rated the professional cleaning of teeth as the most vital work they do, because of its importance in preventing dental troubles.

Ammonia is named for the Egyptian god Ammon, near whose temple in the Libyan Desert ammonia was once largely obtained.

Birds that will nest in bird-houses include no less than 48 species in this country.

Poison ivy may grow as a climbing vine, an upstanding shrub, or a ground trailing plant.

At the present alarming rate, one child in every 2,100 will die in an accident before he is nineteen years old.

The female *Anopheles* mosquito which carries malaria, is most likely to bite human beings at night when they are asleep.

England has established a National Maritime Museum at Greenwich, to hold relics and art illustrating its seafaring history.

For 101 years the Hawaiian volcano Mauna Loa has averaged one crater outbreak every three and a third years, and one flank lava flow every six years.

Air-conditioning the top floor, and charging 75 cents extra per night for the rooms, was tried by an Alabama hotel, with the result that the once-undesirable rooms under the roof became suddenly popular.

## WITH THE SCIENCES THIS WEEK

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How much lumber does a beaver colony cut in a year? p. 309.

GENERAL SCIENCE

# Chemical Promises to Reduce Pneumonia Deaths to Half

This and Other Discoveries Reported by Notables at Opening Rites of Mellon Institute's New Building

See Front Cover

**S**UCCESSFUL chemical warfare against pneumonia, one of the major diseases of mankind, by which there seems a good chance to reduce deaths to about half, was made public by Dr. William W. G. Maclachlan, physician-in-chief at Pittsburgh's Mercy Hospital, speaking at the opening of the Mellon Institute's new building in Pittsburgh.

The chemical used is hydroxyethylapocupreine. It is one of 76 chemical preparations based on quinine which were synthesized by a Mellon Institute laboratory staff under direction of Dr. L. H. Cretcher, and then tested on mice, rabbits and dogs to determine whether they should be tried on human cases.

For two winters Dr. Maclachlan and his associates have used as much of the new chemical as could be produced in treating severe cases of pneumonia. For 100 cases treated this past winter, the mortality was 27 per cent. compared with a normal mortality of about 45 per cent. for 100 non-specifically treated cases in Pittsburgh hospitals.

With due scientific caution, Dr. Maclachlan said:

"We can safely say that in hydroxyethylapocupreine we have developed a quinine derivative which is devoid of any visual disturbance and which appears to have power in affecting a certain number of pneumonia cases in man. Its exact clinical status will have to wait until a larger number of cases have been studied by others and by us."

## Simple To Take

Extremely simple is the administration of the new chemical. The patient simply swallows it in capsules as though it were quinine. Gigantic doses are given, 400 to 800 grains or even higher during a week's time. The usual daily dose for adults is 120 grains.

The chemical is also effective on the kinds of pneumonias for which there is no serum, such as type three.

The beginnings of this new attack on the pneumococcus germ and the disease it produces go back to a German obser-

vation in 1911 that the quinine derivative, ethylhydrocupreine or optochin, had strong power to destroy the germ. But when it was tried on patients it produced temporary blindness in some cases.

In Germany, Japan and at the Mellon Institute research was pushed to produce a similar effective chemical but without the blindness hazard. Some 20,000 white mice were used in Mellon Institute experiments over the last four years until the present chemical was developed.

The chemists have succeeded in increasing the amount of the chemical produced and there is now prospect that supplies will be available for issue to other hospitals for wide-spread clinical trials.

"This chemical is compatible so far as we know with the use of any form of

serum which may be given in certain types of pneumonia," said Dr. Maclachlan, "and further the ease of administration will make it very available for the general practitioner of medicine to use early in pneumococcic disease of the lung."

Hydroxyethylapocupreine is also useful in treating empyema, a common complication of severe pneumonia infections. A weak solution of it injected into the pleural cavity speeds healing, experience showed. Dr. Maclachlan warned, however, that it has no beneficial action on influenza or streptococcus infection.

## Start on Third Day

One striking observation in the clinical tests on pneumonia was that better results were obtained when the treatment with the chemical began on the third day of the attack, instead of the first or second day. The experimenters are now attempting to discover the reason for this. It may have great practical importance as the mortality in cases where treatment was delayed until the third day was less than five per cent., compared with 27 per cent. for the first day and 34 per cent. for the second day.



FROM THE AIR

A good idea of the general plan of Mellon Institute's beautiful new building is obtained from this bird's-eye-view. Detail of the monolith columns is shown in the illustration on the front cover. Those columns, which are without the distracting horizontal lines of pillars which are not in one piece, were turned on huge lathes, and only three workmen at the quarry had the skill to make them. They measure six feet in diameter and 42 feet high, yet no column varies more than an eighth inch in any dimension.



### Use Science

Labor, politics, government, agriculture would pursue different tactics under present conditions if we were really highly civilized and intelligent, Dr. Karl T. Compton, president of the Massachusetts Institute of Technology, charged in addressing the dinner in connection with the dedication of the Mellon Institute's new building.

Science is at the very root of our national program of objectives which President Roosevelt has phrased as "the more abundant life," Dr. Compton explained.

If we were willing to sacrifice present pleasures for the sake of future benefits, Dr. Compton believes that we would see labor unions demanding the introduction by all industries of labor-saving and rapid production machinery in order that they might achieve higher wages and shorter hours. We would see the political forces of the country even more insistent in demanding the creation of wealth than its distribution.

The government would be strengthening its scientific services instead of curtailing them most severely of all services. The agricultural problem would be tackled by a powerful scientific attempt to find new uses for agricultural products rather than trying to achieve prosperity by curtailing production.

We might see, said Dr. Compton, income taxes which would encourage rather than suppress the man who creates a great and useful industry and who uses his wealth in a far-sighted manner for the public good.

### Retirement Age

The age at which our elders should be "placed on the shelf" because of physical and mental incapacity might well be advanced by ten years because medical science has added a decade to life expectancy in the United States during the past quarter-century.

This suggestion, which has a direct bearing on the Supreme Court controversy and the whole problem of old age retirement, was made by a Nobelist in medicine, Dr. W. P. Murphy of Boston, codiscoverer of the liver extract treatment for pernicious anemia.

This means that the conventional retirement ages of 60 and 70 might be advanced to 70 and 80. It is logical to assume, argued Dr. Murphy, that the addition to life expectancy at birth of a decade represents not merely an increase in longevity but that there has been a coincidental increase of ten years of physical and mental vitality.

Science needs to know much more

about the familiar properties of matter, Dr. Irving Langmuir, Nobelist and General Electric chemist, told the gathering of noted scientists and industrial leaders.

He predicted that X-rays, electron diffraction, and optics would open new fields to chemists because these new tools make possible magnifications far greater than are possible with microscopes.

### Wool From Meat

The possibility that artificial wool made from the casein of milk may ruin the sheep farmers of the West was suggested by Dr. Harold C. Urey, Columbia University, another Nobel prize winning chemist.

Italian scientists have succeeded in making a wool substitute from the milk by-product and two regiments of Italian soldiers are now wearing uniforms made of this imitation wool.

Such textiles can also be made from meat scraps and Dr. Urey suggested that in the future the less tender cuts of meat will appear as a lady's smart, spring suit or as a man's dress suit.

Scientists who bring about such revolutions in industry should not overlook the sentence of poverty, privation and disappointment that such changes in our methods of doing things often bring upon an innocent fraction of our population. Scientific institutions should consider the social and economic questions that arise from the research.

### New Kind of Insulin

A new kind of insulin, that may make even more effective the older kind, which for a decade has rescued thousands from death due to diabetes, was made known by Sir Frederick Banting, Nobelist and the discoverer of insulin.

The conqueror of diabetes told how a modification of insulin is being tested. Zinc, a metal, is added to ordinary insulin. Tests on dogs show that the new zinc insulin lowers the dangerous blood sugar for a prolonged period after its injection. At present it has not yet been given adequate tests on human patients.

The Canadian scientist explained that the new zinc insulin is a development that arose from the Danish discovery of how to delay the action of insulin so that a day's supply of insulin could be given in only one injection. Protamine obtained from the sperm of rainbow trout and mackerel was added to insulin to produce this effect, and this protamine insulin was called by Sir Frederick "the greatest advance in the treatment of diabetes since the discovery of insulin."

### Plastic Houses Predicted

The making of better houses out of plastic and synthetic materials was forecast by Dr. G. O. Curme, Jr., vice-president of the Carbide and Carbon Chemicals Corporation and one of the early Mellon Institute investigators.

Homes may not be thought of as a chemical project, Dr. Curme said, but in the countless applications of plastic materials, lacquers and synthetic fibers, he expects new types of house assembly to emerge with greatly reduced costs. This will give sanitary, noiseless, fire-proof, moisture-proof and vermin-proof construction.

He expects rail transportation to follow the trends of automobiles and he said that the Diesel engine used on railroads is of far greater significance than the more obvious streamlined exterior.

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### PHYSICS

### Two-Pound Battery Will Deliver a Thousand Volts

**A** TINY, compact battery that weighs less than two pounds and yet will deliver 1,000 volts was described by Willis E. Ramsey of the Bartol Research Foundation of the Franklin Institute to the American Physical Society. Moreover the battery will keep indefinitely when not in use because it is completely dried and sealed in an airtight box. When operation is desired a few drops of ammonium chloride are applied to the battery and its high voltage is obtained. After use it is again dried. Original purpose of the equipment was to supply high voltage without undue weight in the cosmic ray measuring apparatus sent aloft on un-manned small balloons.

On the same program Prof. H. P. Robertson, Princeton University mathematician, described calculations on the dynamic effects of the sun's radiation on small pieces of matter up to one or two inches in diameter. The involved mathematics of Prof. Robertson show that the effect of the radiation which a particle of matter might receive from the sun and then given off by the particle has the net result of retarding the orbital velocity of the particle about the sun. This slowing down, in turn, has the effect of gradually drawing the particle nearer and nearer to the sun until it is finally drawn into it. Thus the solar radiation is an agency for clearing the neighborhood of the sun of small particles, by sweeping them into it.

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### THE LAST ROUNDUP

*The Longhorns' Last Roundup has become a permanent, Government-protected institution on the Wichita Mountains Wildlife Refuge in Oklahoma, administered by the U. S. Biological Survey. Established ten years ago, the herd now numbers 105 head. Although they are not part of the native American wildlife, the longhorns have been given a home on the range along with bison, elk, and other "native Americans," because of the important part they played in the early history of the West.*

ZOOLOGY

## Muskrat Skins Now Support Million-Dollar Business

### Conservation Measures for Hundred Disappearing Species Engage Attention of Mammalogists

**M**USKRAT skins, once a drug on the fur market at 25 cents apiece, now readily fetch \$2 for prime quality, and in the state of Maryland alone support a business of \$2,000,000 a year turnover.

The rise of the once humble muskrat was the subject of an address before the meeting of the American Society of Mammalogists, by the veteran naturalist Vernon Bailey, recently retired from the U. S. Biological Survey after nearly half a century of service.

"The muskrat industry is recognized as one of the important resources of the state and good muskrat marshes are as valuable as any farm land," said Mr. Bailey. "In fact, they are considered a very popular branch of agriculture, as the muskrats take care of themselves and only have to be harvested in the three winter months when their fur is at its best and there is not much else doing. Three or four muskrats to an acre is about the average yield, but on

a good marsh well managed six or eight to an acre is not an unusual crop."

With the collaboration of Douglass Hayes, Mr. Bailey is developing types of traps for use in taking muskrats, that will be more humane and also less liable to lose their catch than the steel traps now in common use.

#### Beaver Family Life

Beaver colonies once marked almost every creek in the country; civilization, first with hunters and trappers, then with deforestation and stream pollution, almost wiped them out. Now they are beginning to stage a comeback in some favored places.

To get a better understanding of beaver ways, in order the more effectually to befriend them, G. W. Bradt of the Michigan Department of Conservation made a special study of beaver life in his own state, which he summarized before the meeting.

A "typical" beaver colony, he found,

consists of one family, including the two parents, the yearlings born the previous year, and the kits of the current year. The average, for 57 colonies studied, was about five animals.

The average number born in a litter is three or four. There is only one litter born a year. Yearlings are permitted to remain in the colony, but the two-year-old beavers leave or are driven from the home colony shortly before the birth of the second annual litter. They do not always follow watercourses during emigration, but may undertake long overland journeys.

The beavers studied by Mr. Bradt cut between 200 and 300 trees each per year. One acre of poplar trees should support an average beaver colony from one to two and one-half years, depending on circumstances.

#### Yellowstone Elk

Yellowstone Park's northern herd of elk, that winter in the valleys near the northern entrance at Gardiner, Mont., is estimated to contain 9,673 animals this year. An actual count, made during a census conducted between April 10 and 15, tallied 8,318. Because a blizzard and other hampering circumstances prevented a count under normal circumstances, it was the judgment of the naturalist-census takers that an addition of 10 per cent. would more nearly represent the actual elk population.

The taking of the elk census was described by Victor C. Cahalane of the U. S. National Park Service. The count is always made near the end of the winter, while snow still covers the ground and the animals have not begun to migrate and scatter to their spring and summer quarters.

Census takers are experienced naturalists and rangers, traveling on skis or snowshoes, working in little groups over predetermined and assigned areas. They count the animals they actually see, and do their work as rapidly as possible, to avoid counting the same ones twice in case a herd moves.

An airplane was used in making a supplementary count once, in 1935. It was found, however, that the more laborious method of counting on the ground was more thorough and accurate, so the airplane experiment was not repeated.

#### Dying Out

At least 100 mammal species now living may pass out of existence within the next century. North America, with 25 extinct forms, leads all the world



in its reckless destruction of irreplaceable species.

This indictment and warning were uttered by Dr. Francis Harper of the American Committee for International Wildlife Protection. He said, in part:

"The American Committee for International Wildlife Protection is preparing an account of the extinct and vanishing mammals of the world. Approximately 390 species and subspecies come within its scope. Among the 54 which have become extinct since Graeco-Roman times, 46 have been lost within the last century.

"A majority of these mammals have been exterminated by hunting (including trapping and poisoning), chiefly by civilized man.

"In Australia the chief agencies of extinction are such imported pests as the fox, rabbit, domestic cat, and house rats; in the West Indies, introduced rats and the mongoose.

"The rate of extinction is being steadily accelerated."

#### Musk-Ox Skull

No human hunter, probably, was responsible for the death of Indiana's last musk-oxen, yet they apparently died during comparatively late prehistory. A skull of one of these animals, now represented by a species that lives only in the high Arctic, was described by Drs. Marcus Ward Lyon and Fred T. Hall, of South Bend, Ind.

The skull was found near Crawfordsville, Ind., shallowly buried beside a creek with one of its horns protruding from the bank. Kept as a local curiosity for a while, it was finally sent to the U. S. National Museum.

This particular musk-ox did not belong to the living musk-ox genus, but to a related type long since extinct.

#### Once a Swimmer

That pesky mole that roots around in your garden and tunnels under your lawn—is he the descendant of a race of swimming animals?

Nothing would seem more unlikely, yet there are features in his anatomy that strongly suggest the evolution of moles from aquatic forebears, Dr. Berry Campbell of the Western Reserve University School of Medicine told the meeting.

The shape and arrangement of the bones of the shoulder and forelimb are particularly suggestive of originally aquatic use, Dr. Campbell explained. Further link in the chain of evolutionary evidence is the existence of a somewhat mole-like aquatic animal known

as the desman, with an intermediate arrangement between the mole's set-up and the skeletal anatomy of primitive and possibly ancestral forms with longer bones.

#### Animals Hold "Real Estate"

Many wild mammals, like many birds, have a tendency to "stake a claim" to a certain area and vigorously defend it against all comers, Dr. William Henry Burt of the University of Michigan told his fellow-scientists.

The defense of the territory is displayed chiefly during the breeding season, although some species, such as the

squirrels, are known to defend foraging territories as well. Young animals, Dr. Burt said, usually leave the home territory as soon as they are grown up; in some instances their parents actually drive them out.

Old animals in established territories are familiar with every retreat and are relatively safe from enemies. Young animals, on the other hand, while pioneering in new territory are more vulnerable. Here is where predators, such as hawks, owls, and foxes, get in their effective work in keeping down the number of fast-breeding species.

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#### PUBLIC HEALTH

## Lead Poisoning Rates Worst As a Hazard to Workers

### Worse Than Silicosis; Carbon Monoxide and Other Fumes Also Constitute a Serious Health Danger

**L**EAD poisoning, and not silicosis or any of the other newly prominent occupational diseases, is the chief hazard to the health of workers in industry, Dr. William D. McNally of Rush Medical College, Chicago, reported to the Midwest Conference on Occupational Diseases in Detroit.

Carbon monoxide and fumes from oxides of nitrogen in dynamite explosions were described as other serious industrial health hazards.

"Wherever dusts are found containing lead, whether it be in mines, smelting, in the manufacture of lead pigments, or in the manufacture of storage battery plates," Dr. McNally said, "poisoning is certain to result."

"There are over 900 occupations causing injurious effect upon the health of the individuals engaged in them," Dr. McNally stated.

Silicosis, caused by inhalation of silica-laden dust, predisposes the lining of the bronchial tubes to attacks of bronchitis, he explained. The bronchitis lays a foundation for later-developing pneumonia and tuberculosis.

Preventive measures must include the examination of every new employee, good ventilation, masks, and the use of wet processes wherever feasible. Post-mortem examinations are advocated in all cases of death where the worker had been engaged in a dusty atmosphere, as microscopical and chemical examination

of the lungs will definitely prove whether or not the cause in question is one of silicosis.

Carbon monoxide, one of the most important poisons associated with human life and industry, is without doubt the oldest known poison, Dr. McNally said. Wherever gasoline engines are operated, wherever gas heat appliances are used or wherever there is incomplete combustion of any carbonaceous material, this gas is present. The excellent results obtained in the treatment of carbon monoxide by carbon dioxide and oxygen renders all other methods superfluous.

The danger of inhaling oxides of nitrogen was emphasized because of their delayed action. A workman may leave his job complaining of only a bronchial irritation after inhaling the fumes of a dynamite explosion. Several hours later, his lungs become edematous and death may occur within 24 hours.

Danger in the use of solvents such as benzol, carbon tetrachloride, and trichlorethylene, lies not only in industry but in the home as well. Quantities larger than one pint, Dr. McNally warned, should not be sold to the laity.

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The Antarctic region is almost covered by glaciers, Greenland is about three-fourths covered, and Alaska, which ranks third in glaciers, is only about three per cent. overspread by glacial ice.



ROBOT AT WORK

R. B. Johnson, engineer of the International Business Machines Corporation (left) shows how a master answer sheet will control the machine he invented so that it grades examination papers by counting correct answers. Dr. Ben D. Wood, Columbia University psychologist who collaborated in producing the robot (center) is watching as is also Dr. R. D. Allen, Associate Superintendent of the Providence, R. I., public schools.

PSYCHOLOGY-ENGINEERING

## Mechanism 'Feels' Answers To Examination Questions

Scores About Twenty Papers a Minute, Finding Averages; May Revolutionize Education and Employment Methods

**A** NEW machine which can correct up to 20 examination papers a minute—scoring as many as 3000 answers each 60 seconds—has been developed and is now under extensive test. If the enthusiastic approval of educators and employment executives is any indication, it may bring a vast change in the methods of education, vocational guidance and mass employment.

The device "feels" the answers and tells how many are right, how many are wrong and provides the operator with a total score for any given test. If desired it can subtract the number of errors from number right and even convert the result into percentage form.

Think what this would mean to those in charge of employment of large concerns. The United States Civil Service Commission, America's greatest employer, examined 780,000 persons during the past year. Many of these examina-

tions included several different test papers. As many as 201,000 persons have appeared for the examination for a single type of job—that of the railway postal clerk.

Each answer made by each individual—a total for each person running perhaps into the hundreds—is carefully examined and marked if wrong. A total is found of the number of correct answers. This total is combined with that for other tests and the combination manipulated with various weighting systems to find the final percentage score which is the individual's grade on that examination.

This is not the end. The whole process is gone through a second time for meticulous independent checking by another clerk. Before the thousands of papers can be given this careful handling, weeks and months have gone by, and applicants are kept waiting impatiently

for knowledge of their fate. One examination given by the U. S. Civil Service Commission last August was applied for by 25,000 persons. These applicants did not hear what their scores were until March—an anxious suspense lasting more than half a year.

Compared with this the performance of the robot is striking. In the city of Providence, Rhode Island, tests were recently given to 20,000 persons. These included teacher candidates, College of Education students, and junior and senior high school students. The robot completed the scoring of the papers in a single week.

### Very Accurate

In New York state, an inquiry into the cost and character of public education involved giving some 400,000 examinations. The robot completed the scoring in 33½ days, working two shifts totaling 13 hours a day.

The accuracy of the machine far exceeds that of the most carefully trained clerk.

The secret of the operation of the robot, known formally as the International Test Scoring Machine, lies in the fact that the graphite of a soft lead pencil is a conductor of electricity. Electric fingers of the robot "feel" out the answers which the examinee has recorded in pencil on his answer sheet. Where the fingers find a mark, an electric current is let through. A master answer sheet sets the machine so that the current from correct answers is shunted to one milliammeter, that from the wrong answers to another. The scale on these meters reads directly in terms of score. If you want to know the number right, you can read the score on the scale. If you want the number of the correct answers minus number wrong, throw a switch and current from the right answers flows into the ammeter from one direction, that from the wrongs from the opposite direction. The resulting reading is the remainder. If you wish the result in percentage form, operation of another switch will give that to you.

### Speed of Lightning

All answers are "sensed" by the robot simultaneously, and the score for the entire page is produced at the same time. The paper is scored literally with the speed of lightning. All that limits the speed of grading of the papers is the need for feeding papers into the machine and reading the score.

With such a ma- (Turn to page 314)



## GEOPHYSICS

**Aurora Filling Whole Sky Observed in Vermont**

**M**AGNIFICENT auroral displays covering the sky were observed in Vermont during the recent great magnetic storm, Prof. Arthur D. Butterfield of the University of Vermont, informed Science Service.

The streamers of pale light, plainly visible even though a full moon was shining, rose from the whole horizon, even due south. Overhead they merged with a sort of luminous mist, which pulsed from nothing to full glow in fractions of a second.

"I have had many opportunities to observe auroras from the University of Vermont campus," said Prof. Butterfield, "but I have never seen anything like this one."

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## RADIO

**Movies of Sun Show Relation Between Eruptions and Radio**

**T**WO THOUSAND feet of 35 mm motion pictures have been taken at the Mount Wilson Observatory, home of the world's largest telescope, in the study of explosions on the sun and the effect of these eruptions upon short-wave radio broadcasts.

Dr. R. S. Richardson of Mount Wilson has secured considerable evidence to indicate a strong relation exists between the eruptions and radio fadeouts.

Use of the motion picture camera in this research is comparatively new, and speeds up study. The interval between exposures is ordinarily about four minutes, with the exposures requiring 50 seconds.

The instrument is started soon after sunrise and operates continuously with very little attention until shut off an hour before sunset. As a result, a nearly complete record of the appearance of the sun has been obtained since May, 1936.

In discussing 15 eruptions, Dr. Richardson reported that in five cases the time the eruption was first seen agrees to a minute or less with the time when the radio fadeout began. Solar observations were made shortly before the fadeout occurred, the longest interval being 11 minutes.

Six of the eruptions apparently preceded the fade-out by from 2 to 12 minutes. For the four remaining fade-outs, the observations were made from 10 to

30 minutes after the radio disturbance began.

No fadeout, said Dr. Richardson, is definitely known to have preceded an eruption with which it was obviously connected.

The radiation producing the fadeouts seems to come from the outbursts that show conspicuously hydrogen and calcium spectroheliograms.

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## ARCHAEOLOGY

**Prehistoric Mayan Throne May be Seen, Not Touched**

**T**OURISTS who visit the ruined Mayan city of Chichen Itza in Yucatan are allowed to see—but not sit in—the polka-dotted red Jaguar Throne recently discovered by archaeologists.

The Carnegie Institution of Washington, which conducted the excavations, calls this throne, and objects with it, "the most spectacular discovery of archaeological specimens in original position ever made in the New World."

Mexican authorities, says the Carnegie Institution, have wisely decided not to remove the throne from the place in the temple, exactly where Indian officials placed it centuries ago. Glass protects the throne, and lights have been installed so that the fresh colors and snarling face of the stone jaguar may be seen and appreciated.

The animal is painted red, with large apple-green spots of jade inlaid, and green jade eyes. Its flat back forms a throne seat, in the opinion of Dr. Sylvanus G. Morley of the Carnegie staff.

The jaguar discovery was made in the famous temple called El Castillo, or the Castle, a ruined building perched on a lofty pyramid. Recent excavations have revealed that temple and pyramid were enlarged and built over by ambitious Indians. The visible ruins thus encase an earlier temple on its pyramid base. It was within the hidden temple, in an inner chamber, that the red stone jaguar was found well preserved.

A tunnel enables visitors to go to the inner stairway and climb the buried pyramid to the throne-room where warrior cults of Yucatan probably held barbaric rites.

Association of the Jaguar Throne with the warriors is deduced from the fact that this large and fierce American wildcat was the symbolic animal of the warrior class, in the centuries just before Spanish Conquest. This is the era to which the temple belongs.

*Science News Letter, May 15, 1937*

**IN SCIENCE**

## ENTOMOLOGY

**Epsom Salt Effective As A Grasshopper Poison**

**E**PSOM salt may find large-scale use this summer if the expected outbreak of grasshoppers reaches its predicted magnitude. For this chemical, a bitter medicine to reluctant human palates, is even worse for grasshoppers—it kills them.

Discovery of the usefulness of epsom salt as a grasshopper poison is reported (*Science*, April 30) by Hubert W. Frings and Mable S. Frings of the University of Oklahoma. They have compared the standard arsenic-poisoned bran bait with a bran bait prepared with epsom salt, and find the latter to be quite as effective, cheaper to make, and safer to prepare and use.

Their formula is: bran, 60-65 per cent., molasses, 15 per cent., magnesium sulphate (Epsom salt), 20-25 per cent., and enough water to moisten.

Spread on the ground where the young grasshoppers are crawling—and watch them turn up their toes.

*Science News Letter, May 15, 1937*

## GENETICS

**Natural Selection Theory Defended by Scientist**

**D**ARWIN'S original theory of natural selection still remains the only general explanation of the process of evolution, Prof. David S. M. Watson of the University of London declared in a lecture at Yale University, "although," he conceded, "it is clear that other and probably quite dissimilar factors must play a part."

For the apparently meaningless suppression or magnification of some parts of an animal, which has always been a riddle and a stumbling-block to evolutionists, Prof. Watson offered a tentative explanation from the field of genetics. It is possible, he pointed out, for a gene or a gene-combination that benefits the animal in one way to act also toward the modification of structures or characters that do not have any discernible benefit in the struggle for survival.

*Science News Letter, May 15, 1937*



# THE FIELDS

## ASTRONOMY

### Comet Returns as Said; Rediscovered at Harvard

THE Grigg-Skjellerup comet is back in telescopic view again after five years of wandering away from the vicinity of the sun. This periodic comet, number four among the comets of 1937, was rediscovered on Friday morning, April 30, by L. E. Cunningham of Harvard College Observatory.

Too faint to be seen without the aid of a large telescope, it is located approximately halfway between the bright stars Betelgeuse in the constellation of Orion and Procyon in Canis Minor. Astronomers had predicted its return and computed accurately where the comet would be discovered. It is not expected to become visible to the unaided eye and it has no tail.

*Science News Letter, May 15, 1937*

## ETHNOLOGY

### Magic Does Nothing for Man But—It Does Things to Man

MAGIC! Millions of people in jungles, islands, and places not so remote believe in magic. What is it doing for them—and to them?

The answer is shown in Sir James Frazer's newest work. Sir James gained scientific fame with "The Golden Bough," in which he gathered impressive data on beliefs and customs of mankind. In "Aftermath," he offers more evidence. And the moral seems to be this:

Magic does nothing for man. But magic does terrible things to man.

Faith in magic is based on two fallacies, as Sir James analyzes it. One is that by imitating a desired effect, you can produce it. This is imitative magic. It is imitative magic to fashion a wax image, and destroy it, believing the person represented will be destroyed. The other fallacy is that things that have once been in contact can still influence each other when they are separated. This is contagious magic. Example: In treating a knife wound, the knife must be cleaned and treated to aid in healing the wound.

Amplifying these two principles, primi-

itive tribes try to rid themselves of disease, bring rainfall, make fish bite, win wives and wars. They find themselves fighting magic with magic, in desperate battles of power.

It would be as harmless as shadow boxing, except for what magic does to the mind.

Many a natural death, in a magic-ridden community, is laid to wizardry, and avenged by murder of some innocent victim. And far-reaching is the effect on economics. South African Kafirs fear to raise too-bountiful crops lest they be accused of magic in their farming. A missionary tells of a native medicine woman who was so successful at treating certain diseases, that she was driven to stop. Natives argued that if she could cure so easily, she must first give the ailment to the patient. Under the spell of magic, communities fear what is strange. New articles of trade and new inventions get cold welcome.

Magic fights progress. It is a very real social problem for a considerable part of the world—as real as the sit-down strike or old age insurance.

*Science News Letter, May 15, 1937*

## CHEMISTRY

### American Chemical Society Awards \$1,000 Prize

THE \$1,000 prize of the American Chemical Society for 1937 has been awarded to Dr. E. Bright Wilson, Jr., assistant professor of chemistry in Harvard University, it is announced. The award, bestowed annually upon a scientist under thirty-one years of age and of unusual promise, goes to Dr. Wilson, who is twenty-nine, for his experimental work in physical chemistry.

Dr. Wilson was born in Gallatin, Tenn., attended New York City schools and Lawrenceville School, and in 1930 received the degree of Bachelor of Science from Princeton University with highest honors in chemistry.

At Princeton he received his M.A. in 1931; and at the California Institute of Technology received a Ph.D. in 1933.

The prize will be formally presented to Dr. Wilson at the ninety-fourth meeting of the Society to be held in Rochester, N. Y., September 6 to 10. Maintained by Dr. A. C. Langmuir of Hastings-on Hudson, N. Y., and his brother, Dr. Irving Langmuir, it provides "recognition of the accomplishment in North America of outstanding research in pure chemistry by a young man or woman, preferably working in a college or university."

*Science News Letter, May 15, 1937*

## PSYCHOLOGY-PSYCHIATRY

### Sane Are Unlike Abnormal In Attention to Trifles

THE human mind may be thought of as a series of nested boxes like those the baby likes to play with. Deep in the heart, in the innermost core, of the set lie those interests that are really vital to the individual, those things that are engrossing his interest, his enthusiasm, his love or his hate.

On the outer layer, the fringe of the mind, are those passing interests which gain your attention for the moment. The magazine you pick up while waiting for an appointment, the puzzle you work out and promptly forget, the small talk exchanged with a passing acquaintance, are matters occupying the periphery or fringe of your personality.

Such a conception of the mind is suggested by a psychiatrist, Dr. Maria Rickers-Ovsiankina, of the Worcester State Hospital and the Memorial Foundation for Neuro-Endocrine Research. Dr. Rickers-Ovsiankina recently observed some interesting differences between normal persons and those with the mental disease schizophrenia regarding the behavior of this outer circle of the mind.

Suppose you were waiting for an appointment. A trick matchbox, a kaleidoscope, some puzzles and little skill tricks lie on a convenient table. What would you do? What would an insane person do?

You may be surprised to learn that normal and schizophrenic persons are alike, on the average, in the time given to the objects. Individuals either well or ill vary from those who give them only a cursory glance to those who will devote most of a half-hour wait to one of the puzzles. But the schizophrenic's attention seems more superficial, the normal person's activity is purposeful.

If the normal person is interrupted while working out a jig-saw puzzle, he will return to it when he can. He feels the need to complete a task once started. The schizophrenic patient does not. He is willing to flit from task to task and thought to thought so long as the interest is peripheral.

But once let the task touch upon the core of his mental compartments, that "complex" at the center of his interests, then he can pursue the goal with as much enthusiasm as any man.

A normal man seems able to give better attention to the trivialities that do not concern him intimately.

*Science News Letter, May 15, 1937*



#### PRESENT METHOD

*Miss Neva Snell, of the U. S. Civil Service Commission, is scoring one of the thousands of examination papers that must be graded there each year. The stencil sheet, containing correct answers and windows for the examinee's answers to show through, is a great aid in the scoring but still it is a tedious task and involves nervous- and eye-stain.*

chine, it will be possible to determine the qualifications of applicants for positions in large companies, and city, state and federal governments with a speed and efficiency heretofore unknown and impossible.

In many cases, it will be possible to hand out the ratings to applicants before they leave the examination room. Employers can be furnished with a list of eligibles within a week after a large competitive examination is held. Men can be placed on the job soon after the opening occurs and before the best of the eligibles have had time to secure other employment, to move away, or to be washed under the morale-depressing tide of unemployment and destitution.

The criticism, well-founded, that has imperiled or defeated the merit system in many government systems is the tedious delay attendant upon the scoring of thousands of examination papers. In ordinary times, the delay is onerous; in emergencies it seems intolerable. With this new machine, it appears to be possible to eliminate most of the delay.

Labor sympathizers may object that the robot will throw examining clerks out of employment. Even in the case of the United States Civil Service Commission, such an objection would be based

upon a misconception. Always the commission is hampered by lack of sufficient personnel to keep abreast of their work. Something like 100,000 examination papers are always waiting to be scored.

The implications for education and vocational guidance are as striking as those for the field of employment. The possibility of daily tests to check the gain of pupils and efficiency of teaching methods. Immediate discovery and quick attention to pupil deficiencies. Relief for teachers of the arduous clerical work of marking papers and obtaining term averages and percentages. These are but a few of the most obvious possibilities promised by the robot.

Developments will probably follow its use that are as far-reaching as those which came after the development of the group intelligence test.

Credit for the invention should be shared by Dr. Ben D. Wood, of Columbia University. In conducting research for the Carnegie Foundation for the Advancement of Teaching, 200,000 tests were given to high school and college students. When faced with the task of grading these papers, Dr. Wood realized the necessity for mechanical aid. After a year of experimentation, he laid the problem before officials of the Interna-

tional Business Machines Corporation. The robot, invented by R. B. Johnson, is the result of many years of further research on behalf of that company.

*Science News Letter, May 15, 1937*

#### ASTROPHYSICS

### Neon, Gas of Signs, Found Abundant Among the Stars

**N**EON, the gas that glows redly in modern advertising signs, is rare on earth but very abundant in the starry universe as a whole, it was disclosed at the meeting of the American Philosophical Society following a report presented by Dr. Donald H. Menzel of Harvard College Observatory.

In some of the glowing gaseous nebulae that are included in our own galaxy neon is fully as abundant as oxygen, the most common element on earth, or even more abundant.

Dr. Menzel reported on the results of months of study of photographs of the eclipse observed last summer in Siberia. During this eclipse the corona, or pearly glowing halo that always surrounds the sun but can be seen and photographed only during eclipses, was far brighter than it has been in past eclipses. Earlier observations showed the corona about as bright as the moon, but during the Siberian eclipse it glowed sixty times brighter than the moon.

*Science News Letter, May 15, 1937*

#### PUBLIC HEALTH

### Industrial Unrest And Poor Health Linked

**I**NDUSTRIAL unrest is closely associated with the poor state of health of the industrial population, Dr. Emery R. Hayhurst, industrial health authority of Columbus, Ohio, told members of the Midwest Conference on Occupational Diseases.

Organized labor, he continued, gives little evidence of interest in industry as a source of disease.

About 45 million workers are employed in the United States today. Of this group the shop employees suffer from 3 to 5 times as much sickness-absenteeism as office staffs.

Illness accounts for 20 times as many cases and 7 times as many days of absenteeism as accidents among industrial workers. The blow, Dr. Hayhurst pointed out, falls especially upon the semi-skilled and unskilled workers.

*Science News Letter, May 15, 1937*



PSYCHIATRY-PSYCHOLOGY

# Hope For Epilepsy Conquest Found Through Brain Waves

Pattern of Electric Impulses, Now Used for Diagnosis, May Eventually Lead to Discovery of Drug for Cure

**T**WENTIETH century methods of attack which seem to promise the eventual conquest of epilepsy, the "divine malady" of the ancients which afflicts half a million Americans today, were outlined at a special session of the American Psychiatric Association.

Brain wave records, gift to medicine of modern physics, have shown that during epileptic seizures, or fits, the normal rhythm of the brain's electrical activity is disturbed, Drs. F. A. Gibbs, E. L. Gibbs and W. G. Lennox of Boston reported.

The condition may be compared to certain heart disorders in which the rhythm of the heart's beat is disturbed. Brain cells, like the heart, are always active and they beat out characteristic rhythms which may be traced on paper by leading off, amplifying and recording the tiny electric currents that accompany the activity of each brain cell.

In grand mal epilepsy the electrical activity of the brain may become too fast. In another type of epilepsy it may be too slow. In petit mal epilepsy, it may oscillate between fast and slow.

What is needed to prevent the seizures or fits of epilepsy, the Boston investigators pointed out, is something to stabilize the rate of the brain's activity. This could be done, Dr. Lennox said, by making certain changes in body chemistry, for example by increasing the amount of carbon dioxide in the air that the patient exhales. To accomplish this, he said, the process which causes irritability must be known.

## Chemistry of Genes

While brain wave records may show the way to keep the epileptic patient free of attacks, the conquest of epilepsy may result if scientists can find a way to change the chemistry of the genes, Dr. Lennox suggested. The tendency or predisposition to have convulsions or fits, which occur in epilepsy and in other disorders, is, Dr. Lennox said, inherent and fundamental. With a certain stimulus, or even without stimulus, a person

who has this predisposition will have a convulsion or fit, and the person without the inherent tendency will not.

The genes, which carry inheritance for epilepsy and other qualities, are now believed to be chemical substances. This gives Dr. Lennox the hope that chemists some day will be able to find a way to change the chemical structure of the gene so as to eliminate the tendency to epilepsy and other convulsions.

The knowledge necessary to achieve this end can only be gained through extensive research. Pointing out that the total amount of money especially designated for epilepsy research amounts to only \$12,000 to \$15,000 annually, Dr. Lennox urged a fund-raising campaign. As many persons suffer from epilepsy in America, today, he said, as are afflicted with diabetes or active tuberculosis.

## Epilepsy Diagnosed

Diagnosis by brain wave records of more than 400 cases of epilepsy was reported by Drs. Herbert H. Jasper, William A. Hawke and Ira C. Nichols of Providence, R. I. Epilepsy was also detected by means of brain wave records in persons not suspected of having the disease.

Study of brain waves, the Providence investigators reported, shows that confusion in mental processes, irritability, impulsiveness and stubbornness are associated with a kind of brain activity found in borderline convulsive states.

## New Conception

Brain wave records have led scientists to revise their conceptions of the brain and its activity. The brain, Dr. Jasper, said, can no longer be thought of as an "intricate network of pathways and switches" by which an impulse starting at the sense organ is finally conducted to its destination. The brain is now thought of as being in "continuous, spontaneous activity" and impulses arriving there from the sense nerves are "thrown into a pool of dynamic excitatory processes that form the basis for the electri-

cal brain waves which can be recorded."

The brain is viewed by Dr. Hallowell Davis of Boston as an organization among myriads of individual elements. This newly-discovered physiological organization of the activity of the brain cells is shown by their electrical activity.

*Science News Letter, May 15, 1937*

MEDICINE

## Heart's Work Increased By Injecting Fluid Into Veins

**I**NJECTING large quantities of fluid into the veins of patients, a common procedure after surgical operations, gives the heart 50 per cent. more work to do, Dr. Mark D. Altschule and Dorothy R. Gilligan, of Beth Israel Hospital, Boston, told the American Society for Clinical Investigation meeting in Atlantic City.

They studied patients without heart or blood vessel disease. Although there was no evidence that this added strain is not well tolerated by patients with normal hearts, the Boston investigators inferred that the increase in work might be excessive for patients with heart disease.

A large group of patients with no evidence of heart disease were given intravenous injections of salt or sugar solutions, such as are routinely used, in amounts from 1 to 3 pints. The rates of injection varied. Immediately after the injection, the minute volume output of the heart and the blood volume were increased and the velocity of the blood flow was accelerated. With the more rapid rates of injection or the larger volumes of fluid, significant and even more marked increases in the blood pressure in the veins was observed. In patients who had no signs of heart disease the blood pressure in the veins returned to the control level within about 20 minutes.

Slight increases in pulse rate, blood pressure in the arteries and pulse pressure were observed in about two-fifths of the patients, and changes in heart action in some cases were also seen in electrocardiograms.

## Faulty Diet a Danger

The combination of a faulty diet and indiscriminate use of bicarbonate of soda during child-bearing may bring on the dangerous condition of toxemia in prospective mothers, Dr. Maurice B. Strauss of Boston reported.

The specific diet fault is the eating of too little meat and other protein foods



in the face of the unborn baby's requirements for proteins, Dr. Strauss said.

During the last three months before the birth of their children, women whose blood contained normal amounts of protein were able to take either sodium chloride (salt) or sodium bicarbonate without any significant effect, Dr. Strauss found.

When he gave salt or soda to prospective mothers whose blood had less than the normal amount of protein, due part-

ly to eating too little meat, water was retained in their body tissues so that they gained from 5 to 20 pounds in weight within one week's time. At the same time, edema, or watery swelling of the tissues, appeared and the blood pressure rose significantly. Half of these women showed signs of kidney disturbance and one-third of them had symptoms such as precede an attack of convulsions.

*Science News Letter, May 15, 1937*

ICHTHYOLOGY-HERPETOLOGY

## Good Fishing in Panama Lakes; All They Need is Some Fish

**P**RESIDENT Roosevelt, fisherman, can not now have the pleasure of casting a line over the waters of what might be an angler's paradise—the Panama Canal Zone's two artificial lakes, Gatun and Madden, formed by the damming of the Chagres river.

Here, in the shadow of hills clad in rich tropical forests, disciples of Izaak Walton might taste the joys of tropical freshwater fishing. The only trouble at present is, there are no fish of the right kinds in the lakes.

At the meeting of the American Society of Ichthyologists and Herpetologists in Washington, Dr. Samuel F. Hildebrand of the U. S. Bureau of Fisheries told of the plight of these two lakes.

The most numerous fish that live in them now are enemies rather than attractions to fishermen. They are small fish called characins, which attack and devour other fish. They have thus far defeated attempts to plant fingerlings of desirable game species in the lakes. So the only fishing that is possible at all is for tarpon that wander in from the sea.

Dr. Hildebrand proposed that game

fish for future plantings be held at the hatchery until they are from 4 to 6 inches long. "They will then be as large as or larger than the chief local predators and fully acclimated," he said. "Their chances of survival would be much greater."

### Suckers in Alaska

There were suckers in Alaska long before the tribe of Dangerous Dan McGrew trimmed their first three-card-monte victims. Long before the Pleistocene ice age, in fact. But these suckers were the real kind, with fins and gills.

At the meeting Dr. Erich M. Schlaikjer of the American Museum of Natural History described the fossil remains of a fish species found in Alaska, which most closely resembles the modern fish known as the long-nosed sucker.

Dr. Schlaikjer also described another fossil Alaskan fish, which belongs to the same family as the Mississippi River species known as the round sunfish. This entire family seems to have originated in North America and never to have emigrated, for fossils have never been found in any other land.

### Fish Choosy About Backgrounds

Many kinds of fish can change their skin colors to blend in with the kind of background against which they find themselves. But fish also know how to choose backgrounds that fit their natural colors, declared Drs. Frank A. Brown of the University of Illinois and David H. Thompson of the Illinois Natural History Survey. But the dark fish are the more careful choosers. Subjected to carefully controlled tests, dark fish chose dark backgrounds more often than light fish chose white backgrounds.

## RADIO

May 18, 4:15 p. m. E.S.T.  
THE SUPERIOR CHILD—Dr. John E. Bentley of the American University.

May 25, 4:15 p. m., E.S.T.  
STAINED GLASS—ART AND SCIENCE—Lawrence Saint, well-known artist of Philadelphia.

In the Science Service series of radio discussions led by Watson Davis, Director, over the Columbia Broadcasting System.

### Altitude Makes Difference

Mountaineers are said to differ notably from lowlanders. That this is true among snakes at least, was attested by Charles M. Bogert of the American Museum of Natural History.

One species in the Southwest and Mexico, the patch-nosed snake, has two definitely distinguished races that occupy the same general area on the map. But one is found only in the lowlands, the other above 4,000 feet elevation. Neither is ever found in the other's habitat, though the mountain race forms several upland "islands" in the lowland population.

Where the two populations meet, near the 4,000 foot line, specimens showing intergradation between the characters of the two races are often found.

*Science News Letter, May 15, 1937*

RADIO

### European Television Received In America

**R**ECEPTION of some schedules of television transmitters in London and Berlin at Riverhead, N. Y., was reported to the International Scientific Radio Union and the Institute of Radio Engineers meeting jointly in Washington, D. C.

These signals were 40 to 45 megacycles, which is shorter in wavelength than even the short waves commonly receivable with present short wave sets. H. O. Peterson and D. R. Goddard of R. C. A. Communications explained that daily observations of these transatlantic signals had been made since the middle of January.

Such short waves are generally not considered to travel much farther than the eye can see. But direction measurements showed that at times the signal arrived from the reverse direction over the longest way around the world.

*Science News Letter, May 15, 1937*

Red color is rare in the flowers of England.

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# ETHNOBOTANY

## NATURE RAMBLINGS

by Frank Thone



"Yarb-Doctorin'"

FOLK-medicine persists most astonishingly in nooks and corners of this land of ours, for all that we pride ourselves on our national modernity and updateness.

A detailed study into the folk-medicine practices and beliefs of people in the Arkansas hills has recently been made by two St. Louis botanists, W. W. Barkley and Fred A. Barkley. They report their odd findings in the *Missouri Botanical Garden Bulletin* (April).

Some of the remedies suggest possible connections, more or less remote, with those still popular on more sophisticated drugstore shelves. Wild cherry bark still has wide credit even in the big towns, as a cough remedy, and down in Arkansas the Barkleys found that sweetened water in which cherry bark had been soaked was considered a sure cure for coughs.

But most of the remedies still considered potent in Arkansas countryside have long since disappeared from the pharmacopeia of the rest of us. Arkansas rustics use peach-leaf tea for worms—and also as a hair tonic! They chew gum turpentine to stop toothache and to cure sores in the mouth and sore throat. Water allowed to stand in a hollow stump (preferably red oak) will take the wrinkles out of the face.

Teas of various kinds play an important part in folk medication. Red oak bark tea or poultice is used against a number of skin troubles. Wild plum bark tea is an asthma cure. Cottonseed tea, plus a little sulphur, is reckoned a sure remedy for colic. Ground-ivy vine tea soothes babies when they have hives. Willow-bud tea is used for chills and horseradish root tea for colds.

Some of the remedies in the Arkansas folk-practice partake more of the nature

of charms than of drugs. The once universally-used asafetida bag is still worn around the neck, against all manner of ailments. For malaria, however, there is a specific: soak a cotton yarn in turpentine and tie it around the body.

In a country once inhabited by Indians, and where many of them still live, it is only natural that Indian medical lore should survive. So a yellow-flowered ground vine called sarsaparilla (it doesn't fit the description of real sarsaparilla) is used for a kind of convul-

sive fit called "red snake disease," while huckleberry root is the accepted remedy for what seems to be epilepsy. The roots of cottonwood and willow, boiled together, are supposed to cure dysentery.

Negro "yarb doctors" also ply their trade. One, who boasts the degrees D. C. and D. O., labels his herb packages with a statement of ingredients ranging from Dandelion to Senna, and proclaims compliance with the Federal Food and Drug Act.

*Science News Letter, May 15, 1937*

### PSYCHIATRY

## First Step in Prevention Of Feeble-mindedness Taken

### Strict Supervision With Control of Marriages Found Successful; Chemistry of Intelligence Discussed

FIRST step toward the prevention of feeble-mindedness by bringing it under control as smallpox and typhoid fever are now controlled has been taken in South Dakota. Dr. F. V. Willhite, superintendent of the State School at Redfield, reported to the meeting of the American Association on Mental Deficiency.

Finding all the feeble-minded, supervising them and preventing their marrying unless they are sterilized are the chief measures used to control this huge and important problem.

All the feeble-minded inhabitants of the state are under the control of a state commission, Dr. Willhite explained. This commission, with sub-commissions in every county in the state, is required to identify, register and maintain a continuative census of all the mentally deficient persons in the state. This includes the 10 per cent. of the feeble-minded who are in institutions and the 90 per cent. who are at large and who, until this program was started, were without control or supervision.

Besides helping the feeble-minded and protecting them from the consequences of their mental deficiency, the commission acts to protect the rest of the inhabitants from the burden of caring for ever-increasing numbers of feeble-minded. To this end, the state commission must file with every marriage license issuing agency in the state a complete list of all those in the state found to be mentally deficient.

Marriage licenses cannot be issued to

the mentally defective unless satisfactory evidence has been submitted to the state commission showing that one of the contracting parties has been sterilized or is otherwise incapable of having children. If the marriage is contracted outside the state, the partners to the marriage become subject to the sterilization law.

"This provides," Dr. Willhite explained, "for that group of cases in which there is no objection to marriage provided society is protected against the hazard of their defective progeny."

Family relationships are otherwise not disturbed. If the feeble-minded person is getting along all right in his home and at his job, he continues as he is. But if he is not doing well, the state commission must take steps to help him.

Over one-fourth of the total known

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mentally deficient persons in the state have been brought under control during the five years since the program was started, Dr. Willhite reported, and the work is steadily going forward.

Cooperation from all groups has been excellent. Objections of parents or other relatives of the feeble-minded disappears as soon as it is explained that the object of the control program is "to do something for, rather than something to" the defective children.

### Chemistry of Intelligence

The chemistry of intelligence, a new science which throws light on the cause of feeble-mindedness and may lead to ways of correcting it, was introduced by Dr. Neil A. Dayton, of the Massachusetts State Department of Mental Hygiene.

Discovery that tall children of average weight have a higher intelligence, on the average, than short, underweight children, led Dr. Dayton to suggest the need for studying this new field of science.

Greater intelligence is found to go with greater than average height, whether the child is normal, mentally retarded, or feeble-minded. This indicates that the basic body chemistry behind growth in height and weight is in some way linked with intelligence. Study of this chemistry of intelligence may lead to ways of correcting the disturbance responsible for the mental defect, as other studies of body chemistry have led to ways of improving the nutritional state of children.

The findings do not mean, Dr. Dayton pointed out, that tall adults are necessarily any more intelligent than short ones, because the findings were made on children who were still growing.

### Diagnostic Tool

Brain waves, the written records of electrical currents accompanying brain cell activity, may in the future help physicians to tell whether a feeble-minded child is suffering from a hereditary mental defect or some other type, it appears from the report of Dr. George Kreezer, of the Vineland, N. J., Training School.

At present it is not yet possible to make a brain-wave diagnosis in individual cases of feeble-mindedness or mental deficiency, Dr. Kreezer emphasized. Different types of mental deficiency, however, show differences in brain wave patterns in addition to the individual differences in brain waves from persons afflicted with the same type of mental deficiency.

In certain types of mental deficiency, Dr. Kreezer found an influence of the

intelligence level on the brain wave patterns. The nature of the effect of intelligence on the brain wave pattern was different in the different feeble-minded types.

### Mother's Age Important

Mothers past 40 years of age are more apt to give birth to mongoloid imbeciles than younger mothers, it appears from the report of Dr. Adrien Bleyer, Washington University School of Medicine.

Records of 2,822 of these unfortunate children were carefully studied especially with regard to the ages of the parents and the order in which the children were born, that is whether the imbeciles

were the first or last of brothers and sisters, or only children. These records covered the major part of the mongoloid imbecile population of the institutions of the United States and Canada.

Of the mongoloids studied, 870, or 30 per cent., were born to women of 40 years or older, and 68 per cent. came after the optimum period of childbearing, from 24 to 30 years, had passed. All other prenatal factors, such as age of the father or difference in ages of the parents, could be ruled out, Dr. Bleyer said. He concluded that advanced maternal age undeniably plays a part in the development of this condition.

*Science News Letter, May 15, 1937*

### NUTRITION

## Ignored Milling Product Is New Breakfast Food

**A** NEW breakfast food which is a good source of vitamin B, the appetite vitamin, made its debut before the American Institute of Nutrition.

Dr. Henry Borsook of Pasadena, Calif., who reported it, said it is what millers call "the scalp of the sizings." Dr. Borsook described it as the most palatable of all cooked cereals with the added advantage of being very cheap. It costs from 1 to 3 cents a pound. Large amounts of this food, about a quarter of a pound a day of the dry material cooked up, brought about very rapid recoveries in patients suffering from lack of vitamin B.

Laboratory scientists have split this vitamin into some six parts, each with a different effect on the animal body, but for human dietary needs the practicing physicians who took part in the discussions agreed that all of the vitamin is essential.

Lack of this vitamin was said to be the most outstanding nutritional problem in America. This applies, explained Dr. Frederick F. Tisdall of the University of Toronto, not only to sick persons but to almost the whole population. He estimated that the majority of persons get only a third of the amount of this vitamin that they should have.

### Source of Pep

Common signs of this dietary lack are a feeling of fatigue, loss of pep, lack of appetite, indigestion, pain and other signs of digestive distress.

The scalp of the sizings is not on the

market at present, but there are plenty of foods on the grocer's shelves which contain good supplies of vitamin B. Chief of these are whole wheat bran; whole grain cereals or breakfast foods, especially wheat and oats; fresh compressed yeast cakes; bottled and evaporated milk; lean meats, especially pork; and both dried and green beans.

### Not Enough Letters

Vitamins have grown so numerous as a result of scientific discoveries in recent years that there are no longer enough letters in the alphabet by which to name them. Some of the nutritionists discussed this at a post-meeting session. No new names were decided upon at this christening party, but certain dangers in selecting names for vitamins were pointed out. The scientists who discover new vitamins are accorded the right of godparents to name their discoveries, but they were warned to select them carefully.

Chief danger is the use of names that suggest a curative effect for the vitamin, as this may lead persons to treating themselves. Self-doctoring is frowned on by the medical profession but not from purely selfish motives. The danger is that the patient may be treating himself for one condition when he is actually suffering from something else.

Valuable and even vital time may be lost before he gets fairly started on the road to recovery.

*Science News Letter, May 15, 1937*



# •First Glances at New Books

Additional Reviews  
On Page 320

## Psychiatry

**THE MIND OF MAN: THE STORY OF MAN'S CONQUEST OF MENTAL ILLNESS**—Walter Bromberg — *Harper*, 323 p., plates, \$3.50. A history of the treatment of mental disease from the days of demonology to those of psychoanalysis. It is unusual to find an entire volume devoted to this subject, which is usually treated briefly in books on medical history or textbooks of psychiatry. Dr. Bromberg besides giving a very readable account of the early bizarre and cruel methods of treating the insane, explains so the layman can understand the principles and methods of modern treatment of mental disease. The intelligent reader will find here the real explanation of many psychiatric terms, such as libido, complex, and super-ego, which are so often used glibly but inaccurately in everyday conversation.

*Science News Letter, May 15, 1937*

## Chemistry

**THE ORGANIC CHEMISTRY OF NITROGEN**—N. V. Sidgwick, new ed. by T. W. J. Taylor and Wilson Baker—*Oxford*, 590 p., \$8.50. This widely-used reference work, which first appeared in 1910, has been revised and brought up to date.

*Science News Letter, May 15, 1937*

## Natural History

**THE SEA**—*Cornell Rural School Leaflet, Cornell Univ.*, 32 p., 10c. if ordered direct from Cornell Rural School Leaflet. A brief treatment of well-selected topics having to do with the sea; illustrations well adapted to the purpose of the pamphlet.

*Science News Letter, May 15, 1937*

## General Science

**THE OUTLINE OF SCIENCE**; one vol. ed. — Sir J. Arthur Thomson, ed. — *Putnam*, 1220 p., illus., \$3.95. A veritable library of science, which was originally published in 1922, in four volumes. It should be supplemented with later books for happenings of the last 15 years.

*Science News Letter, May 15, 1937*

## Meteorology

**WEATHER ELEMENTS, A TEXT IN ELEMENTARY METEOROLOGY**—Thomas A. Blair—*Prentice-Hall*, 401 p., illus., \$5. The author, who is a Senior Meteorologist in the U. S. Weather Bureau and Assistant Professor of Meteorology at the University of Nebraska, undertakes "to present, concisely and systematically, an introduction to the science of meteorology in its present stage of development."

His book is suitable either for class use in college or for the serious general reader who wants to get a whole and consistent picture of the weather.

*Science News Letter, May 15, 1937*

## Psychology

**PSYCHOLOGICAL STUDIES OF HUMAN VARIABILITY**—Walter R. Miles, ed.—*Psychological Review*, 415 p., \$4.50. Dr. Raymond Dodge, honored by this commemorative number of the Psychological Monographs is himself deeply interested in scientific studies of human variability. In this volume a large number of authors have joined to do tribute to an affectionately regarded colleague, by presenting a work of modern research along this line.

*Science News Letter, May 15, 1937*

## Library Science

**BOOKLIST BOOKS, 1936**—*American Library Association*, 60 p., 75c. "As in previous years this list of some three hundred books represents an annual selection made by about fifty voters, mainly librarians." It is arranged conveniently by subject, with an index.

*Science News Letter, May 15, 1937*

## Ichthyology

**MARINE GAME FISHES OF THE PACIFIC COAST FROM ALASKA TO THE EQUATOR**—Lionel A. Walford—*Univ. of California*, 205 p. 70 pl., \$5. In the review of this splendid book, published in the Science News Letter of April 24, the name of the author and of the publisher were omitted. Our apologies!

*Science News Letter, May 15, 1937*

## Criminology

**HERE'S TO CRIME**—Courtney Ryley Cooper—*Little, Brown*, 454 p., \$2.75. In this book you may learn, if you wish, the sordid details of many types of modern organized crime. The publishers, on the jacket, point out that it is not a book for children; neither is it one for the squeamish adult.

*Science News Letter, May 15, 1937*

## Climatology

**CLIMATIC MAPS OF NORTH AMERICA**—Charles F. Brooks, A. J. Connor and others—*Blue Hill Meteorological Observatory, Harvard Univ.*, large portfolio of 26 maps, \$3. The maps show isoclimatic lines for mean annual temperatures, rainfall, relative humidity and a number of other climatic data. (See SNL, April 10, p. 237).

*Science News Letter, May 15, 1937*

## Psychology

**CAREERS AFTER FORTY**—Walter B. Pitkin—*Whittlesey House*, 273 p., \$1.75. America is growing older. As the advancement of medical skill adds years to the latter end of life, an increasing number of individuals are faced with the pressing problem of what to do with life after 40. The author of "Life Begins at Forty" here offers useful advice and a considerable amount of cheer.

*Science News Letter, May 15, 1937*

## Immigration

**IMMIGRATION AND ALIENS IN THE UNITED STATES, STUDIES OF AMERICAN IMMIGRATION LAWS AND THE LEGAL STATUS OF ALIENS IN THE UNITED STATES**—Max J. Kohler—*Bloch*, 459 p., \$3. A posthumous work concerned with the legal aspects of immigration.

*Science News Letter, May 15, 1937*

## Criminology

**CRIME, CROOKS AND COPS**—August Vollmer and Alfred E. Parker—*Funk & Wagnalls*, 260 p., \$2. A book of true crime stories for the layman. The senior author is known for his work in introducing scientific methods in police departments.

*Science News Letter, May 15, 1937*

## Medicine

**HEALTH QUESTIONS ANSWERED**—W. W. Bauer—*Bobbs-Merrill*, 368 p., \$2. Simple, authoritative answers to 1,680 health questions are given by the director of the bureau of health and public instruction of the American Medical Association. The book is not intended to take the place of a physician but it gives information that will relieve many a minor health worry and, if the worry is over a more serious problem, will start the reader on the right road to the proper solution of his difficulty.

*Science News Letter, May 15, 1937*

## VITALISM and MECHANISM A Discussion

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# •First Glances at New Books

Additional Reviews  
On Page 319

## Medicine

**CONTRIBUTIONS TO THE MICROSCOPIC ANATOMY OF THE PANCREAS**—Paul Langerhans, translation by H. Morrison—*Johns Hopkins*, 39 p., \$1. The islands of Langerhans, the body's insulin factory, are very nearly household words in this age of widespread interest and knowledge of medical matters. The first description of these cells in the pancreas, whose malfunction results in diabetes, was given by Paul Langerhans while he was still a medical student. This and other facts about Langerhans are told by Dr. Morrison in this brief volume which contains Langerhans' paper in the original German as well as in Dr. Morrison's translation.

*Science News Letter, May 15, 1937*

## Psychology

**THE PSYCHOLOGY OF ADOLESCENCE**—Luella Cole—*Farrar & Rinehart*, 503 p., \$3.50. A comprehensive book on the psychology of young people, intended as a text for teacher training institutions.

*Science News Letter, May 15, 1937*

## Sociology

**THE GANG: A STUDY OF 1,313 GANGS IN CHICAGO** (2d. rev. ed.)—Frederic M. Thrasher—*Univ. of Chicago*, 605 p., illus., \$4. The author of this sociological study is an associate professor at New York University, and a member of the Advisory Committee on Criminal Justice of the American Law Institute. This revised edition contains a new chapter on crime prevention.

*Science News Letter, May 15, 1937*

## Economics

**UNEMPLOYMENT RELIEF IN PERIODS OF DEPRESSION: A STUDY OF MEASURES ADOPTED IN CERTAIN AMERICAN CITIES, 1857 THROUGH 1922**—Leah Hannah Feder—*Russell Sage Foundation*, 384 p., \$2.50. This report is a historical study not applying to the recent great depression, but covering the years from 1857 through 1922.

*Science News Letter, May 15, 1937*

## Medicine

**AN INTRODUCTION TO MEDICAL SCIENCE**—William Boyd—*Lea and Febiger*, 307 p., illus., \$3.50. The author, professor of pathology in the University of Manitoba, gives in this volume an excellent bird's-eye view of medical science. By using a clear, direct style, he covers a large field in short space without sacrificing essential information. In 20 pages the structure and functions of the body

are explained. The rest of the book is devoted to specific diseases, their causes, effects and treatment. There is a short section on disease prevention. While written primarily for students of nursing, premedical students and clinical laboratory technicians, the book is not too technical for the lay reader who can take his facts without a heavy coating of sugar.

*Science News Letter, May 15, 1937*

## Employment Psychology

**APTITUDES AND APTITUDE TESTING**—Walter Van Dyke Bingham—*Harper*, 390 p., \$3. As America goes back to work, she must catch up with a changed industrial world. Workers and jobs alike need adjustment to new conditions. This book on the discovery of aptitudes will interest all those concerned with guidance or placement of students and employees.

*Science News Letter, May 15, 1937*

## Surgery

**A MANUAL OF OPERATING ROOM PROCEDURES**—Almira W. Hoppe and Lucile M. Halverson—*Univ. of Minnesota*, 239 p., \$2. Useful for nurses and operating room supervisors.

*Science News Letter, May 15, 1937*

## Education

**GUIDES TO STUDY MATERIAL FOR TEACHERS IN JUNIOR AND SENIOR HIGH SCHOOLS, JUNIOR COLLEGES, ADULT EDUCATION CLASSES**—Mary E. Townsend and Alice G. Stewart—*Wilson*, 113 p., 75c. Intended for teachers, this little book should also be of value to many others engaged in research or directing others to source material.

*Science News Letter, May 15, 1937*

## Psychology

**THE PSYCHOLOGY OF THE UNADJUSTED SCHOOL CHILD** (rev. ed.)—John J. B. Morgan—*Macmillan*, 339 p., \$2. The author is professor of psychology at Northwestern University where he has observed some 2500 children in the Psychological Clinic. The book is a practical one, intended for classroom teachers.

*Science News Letter, May 15, 1937*

## Ethnology-Religion

**AFTERMATH, A SUPPLEMENT TO THE "GOLDEN BOUGH"**—Sir James George Frazer—*Macmillan*, 494 p., \$3. See page 313.

*Science News Letter, May 15, 1937*

## Psychology-Safety Engineering

**ACCIDENTS AND THEIR PREVENTION**—H. M. Vernon—*Cambridge (Macmillan)*, 336 p., tables, \$5. Probably 90 per cent. of all accidents are preventable, it is said by authorities quoted by Dr. Vernon. This book, written from the point of view of the psychologist (Dr. Vernon is a member of the Technical Advisory Board of Britain's National Institute of Industrial Psychology) will be of great practical aid in reducing the number of such preventable mishaps in industry, in the home, and on the road.

*Science News Letter, May 15, 1937*

## Bacteriology

**LABORATORY OUTLINE IN FILTERABLE VIRUSES**—Roscoe R. Hyde and Raymond E. Gardner—*Macmillan*, 85 p., \$1.50. Practical exercises for students in public health.

*Science News Letter, May 15, 1937*

## Medicine

**WHO GAVE THE WORLD SYPHILIS? THE HAITIAN MYTH**—Richmond C. Holcomb—*Froben*, 189 p., \$3. Of interest chiefly to historians and syphilologists.

*Science News Letter, May 15, 1937*

## Medicine

**DIABETES: A MODERN MANUAL**—Anthony M. Sindoni—*Whittlesey House*, 240 p., \$2. In very simple, direct style the author answers questions asked by diabetics; tells what the disease is and how it is treated; gives food values, sample menus, instructions for administering insulin and the new protamine zinc insulin; tells what to do in case of insulin shock or diabetic coma, and explains laboratory tests.

*Science News Letter, May 15, 1937*

## Sociology

**SOCIAL WORK YEAR BOOK, 1937: A DESCRIPTION OF ORGANIZED ACTIVITIES IN SOCIAL WORK AND IN RELATED FIELDS** (4th issue)—Russell H. Kurtz, ed.—*Russell Sage Foundation*, 709 p., \$4. A reference work of encyclopedic nature of particular interest to sociologists and those engaged in social work. A large number of prominent authors have contributed to this volume.

*Science News Letter, May 15, 1937*

## Child Psychology

**A MANUAL OF CHILD PSYCHOLOGY**—George Stoddard and Beth L. Wellman—*Macmillan*, 117 p., \$1. A paper-bound manual designed to accompany the authors' book, "Child Psychology."

*Science News Letter, May 15, 1937*